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Fruit Crops
Estimated Production Costs
Ontario

ECONOMICS AND POLICY
COORDINATION BRANCH

ONTARIO MINISTRY OF AGRICULTURE AND FOOD
LEGISLATIVE BUILDINGS, TORONTO, ONTARIO, M7A 1A5

ECONOMICS INFORMATION

REPORT NO. 86-05

FRUIT CROPS

ESTIMATED PRODUCTION COSTS

ONTARIO, 1986

Economics and Policy Coordination Branch
Ontario Ministry of Agriculture and Food
Legislative Buildings, Queen's Park
Toronto, Ontario, M7A 1B6

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INTRODUCTION

Since 1948, the Economics and Policy Coordination Branch has carried out comprehensive studies of major field and horticultural crops grown in Ontario. These studies were designed to determine costs and returns of various farm enterprises, as well as the physical amounts of production inputs required.

Traditionally, data was collected by means of farmer interviews. Published reports of these studies in the form of county, regional and provincial averages found a wide distribution among extension and research personnel, educational institutions, farm organizations, lending institutions and policy makers. Cooperating farmers received reports showing their individual information in comparison with group averages.

With this extensive background in the development of cost studies, the Economics and Policy Coordination Branch has begun to use computers in the preparation of cost data. Methods of computer simulation have now replaced the time consuming process of data collection, tabulation and analysis.

With this new approach, special attention is paid to the physical quantities and prices of inputs for each crop studied. The technology used in the production of various crops is carefully examined so that the computer models accurately reflect the appropriate production technology for each commodity.

Information on physical inputs is obtained from a number of sources, including:

1. Previous studies done by this Branch;
2. Surveys of the farm supply trade;
3. Technical input/output coefficients; and
4. The consensus of producers, researchers, and extension and agribusiness personnel.

THE DEVELOPMENT OF THE ACRES PROGRAM

A large number of computer programs that generate budgets and crop production cost estimates are now in existence. These computer programs vary in their degree of sophistication and in the amount of detail prepared. A large number of estimates covering a wide range of conditions can be generated quickly and efficiently. The effect of varying levels of technology, management practices and price levels can also be analyzed.

Cost of production estimates used in this report are based on the ACRES program. ACRES (Agricultural Crop Enterprises System) is a FORTRAN program originally written in Montana, adapted by Alberta Agriculture and recently modified and rewritten by the Economics and Policy Coordination Branch to meet Ontario conditions. All 1986 cost of production estimates in this report are based on this computer model.

METHODS AND PROCEDURES

The information used in the preparation of each production cost estimate in this report was prepared through the use of recent Economics and Policy Coordination Branch studies, plus consultations with producers and extension, research and agribusiness personnel.

For each crop cost estimate in this report, the data was organized into variable and fixed costs and totalled to arrive at the cost of production both on a per acre and per hectare basis. Variable costs are those which vary directly with the production of each crop grown. They include seed, plants, hired labor, fertilizer, herbicides, insecticides, fungicides, other materials, machinery operating costs, marketing charges and interest on operating capital. Fixed cost inputs are operator labor, management allowance, interest on land, machinery and buildings, depreciation on machinery and buildings, taxes on real estate (net of farm tax rebate), and other overhead cost items.

In this report, cash costs of production are also determined. Cash costs include total variable costs, interest on the debt portion of investment in tractors and machines, taxes and other overhead costs.

LABOR HOURS AND COSTS

The required number of labor hours was based on previous studies, as well as through discussions with those familiar with the production of each study crop. There are some crops which are harvested on a fixed rate per unit. For these crops, the labor hours and costs vary with the yields used in the cost estimate.

The operator labor hours were valued at $6.75 per hour. In addition, an allowance to management was made at the rate of 5 percent of the gross income.

The hired labor cost was calculated on a per hour basis and included benefits such as worker compensation, unemployment insurance, and the Canada Pension Plan. The rates varied according to area, crop and skill involved.

For some crops, piece work rates were used which were suggested by local farm labor pools. An allowance of 15 percent of basic earnings was added to cover benefits.

MATERIALS

The amount of each material input was based on commonly used practices. Input prices are based on averages charged by the trade in the area where the particular crop is grown. For most crops, the quantities of seed, plants, fertilizer nutrients and other inputs are given on a per hectare basis. Because of the multitude of products available, pesticides are grouped as herbicides, insecticides, fungicides, nematicides, etc. The cost and quantity of non-returnable containers is reported where applicable.

TRACTORS, MACHINES AND TRUCKS

Machinery complements used in the various crop production cost estimates were assumed to be five years old. Tractor and machine costs included depreciation, interest on investment, insurance, storage, repairs, maintenance, fuel and lubrication. If machines were used for other farming operations, costs were adjusted based on the proportion of use on the study crop. The declining balance method of depreciation was used, and a 15 percent rate to powered and a 10 percent rate to non-powered machines was applied.

Interest on machinery investment was calculated on the assumption that the equity portion was 70 percent and the debt portion was 30 percent of the total depreciated value. For this report, interest on equity was calculated at 6.1 percent, which was the average interest rate paid by chartered banks on savings accounts. The interest on the debt portion was based on the average prime rate of 10.5 percent, plus one for a total of 11.5 percent. Insurance and storage costs for machinery were based on 1.5 percent of their purchase price.

Repair and maintenance costs for individual machines were based on the fact sheet, "Cost of Owning and Operating Farm Machines", Agdex 825, Ontario Ministry of Agriculture and Food.

Fuel costs were based on the size of each tractor, truck or self-propelled machine used in the production operation. The following farmgate fuel prices were used: gasoline - 36.0 cents/litre; diesel - 37.0 cents/litre. The cost of oil, grease and filters was calculated at 15 percent of the fuel cost.

CUSTOM FARMWORK SERVICES

There are crops produced in Ontario where it is an accepted practice to use custom farmwork services to perform certain operations. Usually, these services are employed when the farmer needs specialized machines, such as harvesters, sprayers, fertilizer applicators and trucks. Most of these machines cannot be economically owned and operated by one producer. Custom costs were itemized on a per hectare or per acre basis.

LAND CHARGES

Determining the annual cost for land use is a controversial part in any study on production costs. During the past two decades, purchasers of farmland have been willing to pay more for it than can be justified from agricultural production. Purchasers believe the speculative aspect of land ownership in inflationary times offers benefits above those received from crop production. In deflationary times, however, this situation is reversed. For this reason, the appropriate interest rate used in calculating the interest cost on bare land for these crop production estimates is the real interest rate. The "real interest rate" is defined as the current lending rate of interest adjusted for inflation.

In this report, interest on land investment was calculated as follows:

1. The value of bare land was based on the average value for land in areas of Ontario where the production of each study crop predominates.

2. The interest rate applied was the prime rate discounted for the rate of inflation, which resulted in a 6.6 percent rate.

The farm real estate taxes used for each study crop reflect the area of production and are subject to Ontario's Farm Tax Reduction Program.

BUILDING COSTS

For those crops where buildings are used in grading, packing, and/or storage, a building cost allowance was made.

The initial cost of these structures was based on the assumption that buildings were five years old.

Depreciation	%
Steel and concrete structures	2.5
Wood structures	5.0
Greenhouses	2.0

The interest on building investment was set at 6.4 percent, which was also used in calculating interest on land investment.

Repairs and Maintenance	%
Steel structures	1.0
Concrete structures	0.25
Wood structures	1.5

Insurance

0.5 percent of initial costs

The cost of machine housing was covered under tractor and machine costs.

Allowances are made for the use of picking baskets, storage bins, and other pieces of reusable equipment required in the production of certain crops.

INTEREST ON OPERATING CAPITAL

Interest on operating capital required to finance each crop was calculated from the time an expenditure was made until the time income was generated from sales. Operating capital includes the cost of materials, fuel, repairs, hired labor and other cash items. In this study, the interest rate applied to operating capital was the average prime rate of 10.5 percent plus 1 percent.

OTHER OVERHEAD

This allowance covers such items as the study crop's share of utilities, accounting and administration costs, use of the farm automobile, and general farm maintenance.

OTHER COST CONSIDERATIONS

Depending on the crop studied, there are certain additional costs such as crop insurance, marketing board fees, grading charges and selling commissions.

YIELDS AND RETURNS

For each study crop presented in this report, a footnote to the table defines how the average yield and average price were calculated.

Additional information on average yields and prices is shown in the Appendix of this report.

GROSS MARGIN ANALYSIS

Gross margin is the amount above the variable costs that a crop contributes to the operator for his wages, management, and to the investment in machinery and land.

CASH ANALYSIS

The cash analysis section estimates the returns over cash costs. Cash costs comprise of all variable costs, as well as interest on the debt portion of tractor and machine investment, real estate taxes and other overhead costs.

Table 1. - Apples on Standard Trees: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Harvesting, 230 hours/ha	1,149	465
Other, 50.7 hours/ha	250	101
Fertilizer:		
Am. nitrate, 36 kg/ha	19	8
Mur. of Pot., 80 kg/ha	30	12
Insecticides	276	112
Fungicides	273	110
Herbicides	100	40
Other sprays	166	67
Bee rental	43	18
Mouse bait, 5.6 kg/ha	9	4
Tractor and machine costs:		
Repairs and maintenance	160	65
Fuel	133	54
O.A.M.C. fees	62	25
Bin rental	297	120
Custom bin hauling	395	160
Interest on operating capital	96	39
TOTAL	3,458	1,400
FIXED COSTS		
Operator labor:		
Harvesting, 19.8 hours/ha	133	54
Other, 34.6 hours/ha	234	94
Management allowance, 5% of gross income	224	91
Tractor and machine costs:		
Depreciation	261	106
Interest on investment	151	61
Insurance and storage	55	22
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
Other overhead	49	20
TOTAL	1,440	583
TOTAL ALL COSTS	4,898	1,983
COST PER UNIT	$261/tonne	$4.96/bu.
(Based on yields of 18.8 tonne/ha and 400 bu./ac.)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $238.67/tonne and $4.54/bu.)[a]		
Gross income	4,487	1,816
Total variable costs	3,458	1,400
Gross margin	1,029	416
CASH ANALYSIS		
Gross income	4,487	1,816
Cash costs[b]	3,614	1,463
Returns over cash costs	873	353

[a] The 1986 price is an average of the previous three years for Ontario-grown apples.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $68/ha ($27/ac.) plus taxes and other overhead costs.

Table 2. - Apples on Standard Trees: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning	[a]	39.5	16.0	268.02	108.46
Brush removal	[a]	4.94	2.0	73.54	29.76
Fertilizing	2	2.47	1.0	43.57	17.63
Mowing	5	6.18	2.5	149.11	60.34
Weed spraying	2	4.94	2.0	95.88	38.80
Pesticide spraying	10	12.4	5.0	403.16	163.15
Summer management	[a]	12.4	5.0	83.40	33.75
Applying mouse bait	1	2.47	1.0	7.78	3.15
Harvesting	[a]	229.8	93.0	1,181.48	478.12
Bin handling & supervision	[a]	19.8	8.0	218.87	88.57

[a]Operation performed as required.

Table 3. - Apples on Size-Controlling Trees: Estimated Cost of Production, Ontario, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Harvesting, 205 hours/ha	1,026	415
Other, 90.2 hours/ha	446	181
Fertilizer:		
Am. nitrate, 136 kg/ha	29	12
Mur. of Pot., 309 kg/ha	46	19
Insecticides	276	112
Fungicides	273	110
Herbicides	100	40
Other sprays	166	67
Bee rental	43	18
Mouse bait, 5.6 kg/ha	9	4
Replacement trees	34	14
Tractor and machine costs:		
Repairs and maintenance	153	62
Fuel	125	51
O.A.M.C. fees	62	25
Bin rental	341	138
Custom bin hauling	455	184
Interest on operating capital	103	42
TOTAL	3,687	1,494
FIXED COSTS		
Operator labor:		
Harvesting, 19.8 hours/ha	133	54
Other, 44.5 hours/ha	300	122
Management allowance, 5% of gross income	258	104
Tractor and machine costs:		
Depreciation	256	103
Interest on investment	145	59
Insurance and storage	53	22
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
Other overhead	49	20
TOTAL	1,527	619
TOTAL ALL COSTS	5,214	2,113
COST PER UNIT	$240/tonne	$4.59/bu.
(Based on yields of 21.7 tonne/ha and 460 bu./ac.)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $238.67/tonne and $4.54/bu.)[a]		
Gross income	5,161	2,088
Total variable costs	3,687	1,494
Gross margin	1,474	594
CASH ANALYSIS		
Gross income	5,161	2,088
Cash costs[b]	3,840	1,556
Returns over cash costs	1,321	532

[a]The 1986 price is an average of the previous three years for Ontario-grown apples.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $65/ha ($26/ac.) plus taxes and other overhead costs.

Table 4. - Apples on Size-Controlling Trees: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Replanting trees.....	[a]	2.47	1.0	38.72	15.67
Pruning.....	[a]	74.1	30.0	392.29	158.75
Brush removal.....	[a]	4.94	2.0	73.54	29.76
Fertilizing.....	2	2.47	1.0	43.57	17.63
Mowing.....	5	6.18	2.5	149.11	60.34
Weed spraying.....	2	4.94	2.0	95.88	38.80
Pesticide spraying.....	10	12.4	5.0	403.16	163.15
Summer management.....	[a]	24.7	10.0	145.18	58.75
Applying mouse bait.....	1	2.47	1.0	7.78	3.15
Harvesting.....	[a]	205.1	83.0	1,057.93	428.12
Bin handling & supervision	[a]	19.8	8.0	231.10	93.52

[a]Operation performed as required.

Table 5. - Sour Cherries for Processing, Hand-Harvested: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Picking, 445 hours/ha	1,819	736
Grading, 59.3 hours/ha	297	120
Other, 37.1 hours/ha	176	71
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	148	60
Fungicides	274	111
Herbicides	42	17
Other sprays	86	35
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	202	82
Fuel	290	117
Building, repairs and electricity	35	14
Marketing board fees	242	98
Interest on operating capital	153	62
TOTAL	4,117	1,666
FIXED COSTS		
Operator labor, 101 hours/ha	684	277
Management allowance, 5% of gross income	444	180
Tractor and machine costs:		
Depreciation	395	160
Interest on investment	213	86
Insurance and storage	104	42
Building use	203	82
Interest on land, $22,240/ha @ 6.6% per annum	1,468	594
Taxes	52	21
Other overhead	99	40
TOTAL	3,662	1,482
TOTAL ALL COSTS	7,779	3,148
COST PER UNIT (Based on assumed yields of 8.97 tonne/ha and 4 ton/acre)	$867/tonne	$787/ton
GROSS MARGIN ANALYSIS (Based on average prices of $989.41/tonne and $897.90/ton)[a]		
Gross income	8,875	3,592
Total variable costs	4,117	1,666
Gross margin	4,758	1,926
CASH ANALYSIS		
Gross income	8,875	3,592
Cash costs[b]	4,363	1,766
Returns over cash costs	4,512	1,826

[a]The price is the 1986 payment for a quality rating of either 95 or 96 percent.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $95/ha ($39/ac.) plus taxes and other overhead costs.

Table 6. - Sour Cherries for Processing, Hand-Harvest: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	74.1	30.0	658.97	266.67
Fertilizing	1	2.47	1.0	32.30	13.07
Cultivation	6	7.41	3.0	129.14	52.26
Mowing	2	2.47	1.0	63.98	25.89
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	6	4.94	2.0	161.26	65.26
Spreading manure	1	4.94	2.0	122.44	49.55
Sow cover crop	1	2.47	1.0	32.30	13.07
General maintenance	[a]	2.47	1.0	37.81	15.30
Distribution and collection of containers	[a]	19.8	8.0	313.31	126.79
Picking	[a]	445	180.0	1,848.11	747.89
Sorting and grading	[a]	59.3	24.0	296.53	120.00
Marketing-delivery	[a]	14.8	6.0	401.65	162.54

[a]Operation performed as required.

Table 7. - Sour Cherries for Processing, Machine-Harvested: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor, 37.1 hours/ha	176	71
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	148	60
Fungicides	274	111
Herbicides	42	17
Other sprays	86	35
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	119	48
Fuel	149	60
Custom harvesting, cooling, delivery	1,977	800
Marketing board fees	242	98
Interest on operating capital	137	55
TOTAL	3,703	1,498
FIXED COSTS		
Operator labor, 66.7 hours/ha	450	182
Management allowance, 5% of gross income	444	180
Tractor and machine costs:		
Depreciation	216	88
Interest on investment	129	52
Insurance and storage	47	19
Interest on land, $22,240/ha @ 6.6% per annum	1,468	594
Taxes	52	21
Other overhead	99	40
TOTAL	2,905	1,176
TOTAL ALL COSTS	6,608	2,674
COST PER UNIT (Based on assumed yields of 8.97 tonne/ha and 4 ton/acre)	$737/tonne	$668/ton
GROSS MARGIN ANALYSIS (Based on average prices of $989.41/tonne and $897.90/ton)[a]		
Gross income	8,875	3,592
Total variable costs	3,703	1,498
Gross margin	5,172	2,094
CASH ANALYSIS		
Gross income	8,875	3,592
Cash costs[b]	3,911	1,582
Returns over cash costs	4,964	2,010

[a]The price is the 1986 payment for a quality rating of either 95 or 96 percent.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $57/ha ($23/ac.) plus taxes and other overhead costs.

Table 8. - Sour Cherries for Processing, Machine-Harvest: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	74.1	30.0	658.97	266.67
Fertilizing	1	2.47	1.0	32.30	13.07
Cultivation	6	7.41	3.0	129.14	52.26
Mowing	2	2.47	1.0	63.98	25.89
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	6	4.94	2.0	161.26	65.26
Spreading manure	1	4.94	2.0	122.44	49.55
Sow cover crop	1	2.47	1.0	32.30	13.07
General maintenance	[a]	2.47	1.0	37.81	15.30

[a] Operation performed as required.

Table 9. - Sweet Cherries for Fresh Market: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Picking, 247 hours/ha	968	392
Grading, 124 hours/ha	618	250
Other, 24.7 hours/ha	114	46
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	252	102
Fungicides	277	112
Herbicides	42	17
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Containers	811	328
Tractor and machine costs:		
Repairs and maintenance	194	78
Fuel	219	89
Building, repairs and electricity	44	18
Interest on operating capital	148	60
TOTAL	4,040	1,635
FIXED COSTS		
Operator labor, 74.1 hours/ha	499	202
Management allowance, 5% of gross income	329	133
Tractor and machine costs:		
Depreciation	380	154
Interest on investment	199	81
Insurance and storage	65	26
Building use	203	82
Interest on land, $22,240/ha @ 6.6% per annum	1,468	594
Taxes	52	21
Other overhead	99	40
TOTAL	3,294	1,333
TOTAL ALL COSTS	7,334	2,968
COST PER UNIT (Based on assumed yields of 4.48 tonne/ha and 2 ton/acre)	$1,637/tonne	$1,484/ton
GROSS MARGIN ANALYSIS (Based on average prices of $1,470.98/tonne and $12.70/3x4 L master)[a]		
Gross income	6,590	2,667
Total variable costs	4,040	1,635
Gross margin	2,550	1,032
CASH ANALYSIS		
Gross income	6,590	2,667
Cash costs[b]	4,280	1,732
Returns over cash costs	2,310	935

[a]The 1986 price is an average of the previous three years for sweet cherries sold through the Central Fruit Exchange.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $89/ha ($36/ac.) plus taxes and other overhead costs.

Table 10. - Sweet Cherries for Fresh Market: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	47.0	19.0	412.30	166.85
Fertilizing	1	2.47	1.0	32.30	13.07
Cultivation	4	4.94	2.0	86.09	34.84
Mowing	3	3.71	1.5	95.95	38.83
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	8	9.88	4.0	322.53	130.52
Spreading manure	1	4.94	2.0	122.44	49.55
Sow cover crop	1	1.24	.5	23.94	9.69
General maintenance	[a]	2.47	1.0	37.81	15.30
Distribution and collection of containers	[a]	9.88	4.0	158.42	64.11
Picking	[a]	247	100.0	997.56	403.69
Sorting and grading	[a]	124	50.0	617.78	250.00
Marketing-delivery	[a]	9.88	4.0	267.77	108.36

[a]Operation performed as required.

Table 11. - Sweet Cherries for Canning and Freezing Purposes: Estimated Cost of Production, Ontario, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Picking, 222 hours/ha	909	368
Grading, 124 hours/ha	618	250
Other, 24.7 hours/ha	114	46
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	252	102
Fungicides	277	112
Herbicides	42	17
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	194	78
Fuel	219	89
Building, repairs and electricity	29	12
Marketing board fees	54	22
Interest on operating capital	119	48
TOTAL	3,180	1,287
FIXED COSTS		
Operator labor, 74.1 hours/ha	499	202
Management allowance, 5% of gross income	297	120
Tractor and machine costs:		
Depreciation	380	154
Interest on investment	199	81
Insurance and storage	65	26
Building use	203	82
Interest on land, $22,240/ha @ 6.6% per annum	1,468	594
Taxes	52	21
Other overhead	99	40
TOTAL	3,262	1,320
TOTAL ALL COSTS	6,442	2,607
COST PER UNIT	$1,438/tonne	$1,304/ton
(Based on assumed yields of 4.48 tonne/ha and 2 ton/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $1,325.45/tonne and $1,201.50/ton)[a]		
Gross income	5,938	2,403
Total variable costs	3,180	1,287
Gross margin	2,758	1,116
CASH ANALYSIS		
Gross income	5,938	2,403
Cash costs[b]	3,420	1,384
Returns over cash costs	2,518	1,019

[a]The price is the 1986 payment for sweet cherries sold through the Ontario Tender Fruit Producers' Marketing Board.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $89/ha ($36/ac.) plus taxes and other overhead costs.

Table 12. - Sweet Cherries for Canning and Freezing Purposes: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	47.0	19.0	412.30	166.85
Fertilizing	1	2.47	1.0	32.30	13.07
Cultivation	4	4.94	2.0	86.09	34.84
Mowing	3	3.71	1.5	95.95	38.83
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	8	9.88	4.0	322.53	130.52
Spreading manure	1	4.94	2.0	122.44	49.55
Sow cover crop	1	1.24	.5	23.94	9.69
General maintenance	[a]	2.47	1.0	37.81	15.30
Distribution and collection of containers	[a]	9.88	4.0	158.42	64.11
Picking	[a]	222	90.0	938.50	379.79
Sorting and grading	[a]	124	50.0	617.78	250.00
Marketing-delivery	[a]	9.88	4.0	267.77	108.36

[a]Operation performed as required.

Table 13. - Sweet Cherries for Maraschino Purposes: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Picking, 247 hours/ha	968	392
Grading, 124 hours/ha	618	250
Other, 24.7 hours/ha	114	46
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	252	102
Fungicides	277	112
Herbicides	42	17
Manure, 22.4 tonne/ha	247	100
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	194	78
Fuel	219	89
Building, repairs and electricity	29	12
Marketing board fees	54	22
Interest on operating capital	119	48
TOTAL	3,239	1,311
FIXED COSTS		
Operator labor, 74.1 hours/ha	499	202
Management allowance, 5% of gross income	159	64
Tractor and machine costs:		
Depreciation	380	154
Interest on investment	199	81
Insurance and storage	65	26
Building use	203	82
Interest on land, $22,240/ha @ 6.6% per annum	1,468	594
Taxes	52	21
Other overhead	99	40
TOTAL	3,124	1,264
TOTAL ALL COSTS	6,363	2,575
COST PER UNIT (Based on assumed yields of 4.48 tonne/ha and 2 ton/acre)	$1,420/tonne	$1,288/ton
GROSS MARGIN ANALYSIS (Based on average prices of $707.59/tonne and $641.50/ton)[a]		
Gross income	3,170	1,283
Total variable costs	3,239	1,311
Gross margin	-69	-28
CASH ANALYSIS		
Gross income	3,170	1,283
Cash costs[b]	3,479	1,380
Returns over cash costs	-309	-97

[a]The price is the 1986 payment for sweet cherries sold through the Ontario Tender Fruit Producers' Marketing Board.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $89/ha ($36/ac.) plus taxes and other overhead costs.

Table 14. - Sweet Cherries for Maraschino Purposes: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	47.0	19.0	412.30	166.85
Fertilizing	1	2.47	1.0	32.30	13.07
Cultivation	4	4.94	2.0	86.09	34.84
Mowing	3	3.71	1.5	95.95	38.83
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	8	9.88	4.0	322.53	130.52
Spreading manure	1	4.94	2.0	122.44	49.55
Sow cover crop	1	1.24	.5	23.94	9.69
General maintenance	[a]	2.47	1.0	37.81	15.30
Distribution and collection of containers	[a]	9.88	4.0	158.42	64.11
Picking	[a]	247	100.0	997.56	403.69
Sorting and grading	[a]	124	50.0	617.78	250.00
Marketing-delivery	[a]	9.88	4.0	267.77	108.36

[a]Operation performed as required.

Table 15. - Concord Grapes for Processing: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor, 126 hours/ha	600	243
Fertilizer:		
Am nit. 170 kg/ha	37	15
15-15-15 100 kg/ha	23	9
Insecticides	68	28
Fungicides	111	45
Herbicides	42	17
Cover crop seed	10	4
Tying material	12	5
Trellis maintenance	86	35
Tractor and machine costs:		
Repairs and maintenance	68	28
Fuel	72	29
Custom harvest and delivery	435	176
Marketing board fees	63	26
Interest on operating capital	94	38
TOTAL	1,721	698
FIXED COSTS		
Operator labor, 34.6 hours/ha	234	94
Management allowance, 5% of gross income	115	47
Tractor and machine costs:		
Depreciation	145	59
Interest on investment	83	34
Insurance and storage	30	12
Interest on land, $11,120/ha @ 6.6% per annum	734	297
Taxes	52	21
Other overhead	49	20
TOTAL	1,442	584
TOTAL ALL COSTS	3,163	1,282
COST PER UNIT	$441/tonne	$401/ton
(Based on average yields of 7.17 tonne/ha and 3.2 ton/acre)		
GROSS MARGIN ANALYSIS		
(Based on average prices of $320.80/tonne and $291.00/ton)[a]		
Gross income	2,301	931
Total variable costs	1,721	698
Gross margin	580	233
CASH ANALYSIS		
Gross income	2,301	931
Cash costs[b]	1,859	754
Returns over cash costs	442	177

[a]The 1986 price is an average of the previous three years for Concord grapes sold through the Ontario Grape Growers' Marketing Board.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $37/ha ($15/ac.) plus taxes and other overhead costs.

Table 16. - Concord Grapes for Processing: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning	1	61.8	25.0	330.51	133.75
Brush removal	1	2.47	1.0	36.77	14.88
Tying	1	39.5	16.0	168.03	68.00
Fertilizing	1	2.47	1.0	27.97	11.32
Discing	2	2.47	1.0	43.05	17.42
Rotovating	2	2.47	1.0	47.69	19.30
Weed spraying	1	2.47	1.0	47.94	19.40
Pesticide spraying	4	4.94	2.0	161.26	65.26
Sowing cover crop	1	2.47	1.0	27.97	11.32
Summer pruning & suckering	[a]	24.7	10.0	123.56	50.00
Ditching & grading	[a]	4.94	2.0	85.15	34.46
Vineyard maintenance	[a]	9.88	4.0	132.75	53.72

[a]Operation performed as required.

Table 17. - DeChaunac Grapes for Processing: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor, 146 hours/ha	692	280
Fertilizer:		
Am nit. 170 kg/ha	37	15
15-15-15 100 kg/ha	23	9
Insecticides	140	57
Fungicides	346	140
Herbicides	42	17
Cover crop seed	10	4
Tying material	15	6
Trellis maintenance	99	40
Tractor and machine costs:		
Repairs and maintenance	112	45
Fuel	90	36
Custom harvest and delivery	530	215
Marketing board fees	77	31
Interest on operating capital	127	51
TOTAL	2,340	946
FIXED COSTS		
Operator labor, 43.2 hours/ha	292	118
Management allowance, 5% of gross income	168	68
Tractor and machine costs:		
Depreciation	199	81
Interest on investment	116	17
Insurance and storage	42	47
Interest on land, $11,120/ha @ 6.6% per annum	734	297
Taxes	52	21
Other overhead	49	20
TOTAL	1,652	669
TOTAL ALL COSTS	3,992	1,615
COST PER UNIT (Based on average yields of 8.74 tonne/ha and 3.9 ton/acre)	$457/tonne	$414/ton
GROSS MARGIN ANALYSIS (Based on average prices of $384.70/tonne and $349.00/ton)[a]		
Gross income	3,363	1,361
Total variable costs	2,340	946
Gross margin	1,023	415
CASH ANALYSIS		
Gross income	3,363	1,361
Cash costs[b]	2,493	1,008
Returns over cash costs	870	353

[a]The 1986 price is an average of the previous three years for DeChaunac grapes sold through the Ontario Grape Growers' Marketing Board.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $52/ha ($21/ac.) plus taxes and other overhead costs.

Table 18. - DeChaunac Grapes for Processing: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Pruning	1	74.1	30.0	396.61	160.50
Brush removal	1	2.47	1.0	36.77	14.88
Tying	1	49.4	20.0	210.04	85.00
Fertilizing	1	2.47	1.0	27.97	11.32
Discing	2	2.47	1.0	43.05	17.42
Rotovating	2	2.47	1.0	47.69	19.30
Weed spraying	1	2.47	1.0	47.94	19.40
Pesticide spraying	9	11.1	4.5	362.81	146.82
Sowing cover crop	1	2.47	1.0	27.97	11.32
Summer pruning & suckering	[a]	24.7	10.0	123.56	50.00
Ditching & grading	[a]	4.94	2.0	85.15	34.46
Vineyard maintenance	[a]	9.88	4.0	132.75	53.72

[a]Operation performed as required.

Table 19. - Clingstone Peaches (108 trees/acre) for Processing: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Harvesting, 173 hours/ha	640	259
Grading, 39.5 hours/ha	198	80
Other, 163 hours/ha	801	324
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	390	158
Fungicides	487	197
Herbicides	42	17
Manure, 11.2 tonne/ha	124	50
Replacement trees, 12/ha	59	24
Tractor and machine costs:		
Repairs and maintenance	207	84
Fuel	248	100
Building, repairs and electricity	30	12
Marketing board fees	136	55
Interest on operating capital	133	54
TOTAL	3,591	1,453
FIXED COSTS		
Operator labor, 95.1 hours/ha	642	260
Management allowance, 5% of gross income	288	117
Tractor and machine costs:		
Depreciation	393	159
Interest on investment	218	88
Insurance and storage	93	38
Building use	203	82
Interest on land, $22,240/ha @ 6.6% per annum	1,468	594
Taxes	52	21
Other overhead	99	40
TOTAL	3,456	1,399
TOTAL ALL COSTS	7,047	2,852
COST PER UNIT (Based on assumed yields of 11.2 tonne/ha and 5 ton/acre)	$629/tonne	$570/ton
GROSS MARGIN ANALYSIS (Based on average prices of $514.64/tonne and $466.50 /ton)[a]		
Gross income	5,764	2,332
Total variable costs	3,591	1,453
Gross margin	2,173	879
CASH ANALYSIS		
Gross income	5,764	2,332
Cash costs[b]	3,840	1,554
Returns over cash costs	1,924	778

[a]The 1986 price is an average of the previous three years for clingstone peaches sold through the Ontario Tender Fruit Producers' Marketing Board.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $98/ha ($40/ac.) plus taxes and other overhead costs.

Table 20. - Clingstone Peaches (108 trees/acre) for Processing: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Planting replacement trees	[a]	2.47	1.0	16.68	6.75
Pruning and brush removal	1	98.9	40.0	686.94	277.99
Cultivation	4	4.94	2.0	86.09	34.84
Spreading manure	1	3.71	1.5	94.42	38.21
Fertilizing	1	2.47	1.0	32.30	13.07
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	10	9.9	4.0	322.53	130.52
Hand thinning	1	89.0	36.0	444.80	180.00
Mowing	4	4.94	2.0	127.95	51.78
General maintenance	[a]	7.41	3.0	89.38	36.17
Distribution and collection of containers	[a]	24.7	10.0	390.76	158.13
Picking	[a]	173.0	70.0	668.90	270.69
Grading	[a]	39.5	16.0	197.69	80.00
Marketing-delivery	[a]	7.41	3.0	200.83	81.27

[a] Operation performed as required.

Table 21. - Clingstone Peaches (145 trees/acre) for Processing: Estimated Cost of Production, Ontario, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Harvesting, 242 hours/ha	897	363
Grading, 49.4 hours/ha	247	100
Other, 217 hours/ha	1,070	433
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	390	158
Fungicides	487	197
Herbicides	42	17
Manure, 11.2 tonne/ha	124	50
Replacement trees, 17/ha	84	34
Tractor and machine costs:		
Repairs and maintenance	239	97
Fuel	312	126
Building, repairs and electricity	30	12
Marketing board fees	190	77
Interest on operating capital	161	65
TOTAL	4,369	1,768
FIXED COSTS		
Operator labor, 117 hours/ha	792	321
Management allowance, 5% of gross income	403	163
Tractor and machine costs:		
Depreciation	481	195
Interest on investment	251	101
Insurance and storage	86	35
Building use	203	82
Interest on land, $22,240/ha @ 6.6% per annum	1,468	594
Taxes	52	21
Other overhead	99	40
TOTAL	3,835	1,552
TOTAL ALL COSTS	8,204	3,320
COST PER UNIT (Based on assumed yields of 15.7 tonne/ha and 7.0 ton/acre)	$523/tonne	$474/ton
GROSS MARGIN ANALYSIS (Based on average prices of $513.95/tonne and $466.50/ton)[a]		
Gross income	8,069	3,266
Total variable costs	4,369	1,768
Gross margin	3,700	1,498
CASH ANALYSIS		
Gross income	8,069	3,266
Cash costs[b]	4,632	1,874
Returns over cash costs	3,437	1,392

[a]The 1986 price is an average of the previous three years for clingstone peaches sold through the Ontario Tender Fruit Producers' Marketing Board.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $112/ha ($45/ac.) plus taxes and other overhead costs.

Table 22. - Clingstone Peaches (145 trees/acre) for Processing: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Planting replacement trees	[a]	2.47	1.0	16.68	6.75
Pruning and brush removal	1	133	54.0	943.32	381.74
Cultivation	4	4.94	2.0	86.09	34.84
Spreading manure	1	3.71	1.5	94.42	38.21
Fertilizing	1	2.47	1.0	32.30	13.07
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	10	9.9	4.0	322.53	130.52
Hand thinning	1	119	48.0	593.06	240.00
Mowing	4	4.94	2.0	127.95	51.78
General maintenance	[a]	7.41	3.0	89.38	36.17
Distribution and collection of containers	[a]	34.6	14.0	545.64	220.81
Picking	[a]	242	98.0	924.91	374.29
Grading	[a]	49.4	20.0	247.11	100.00
Marketing-delivery	[a]	9.88	4.0	267.77	108.36

[a]Operation performed as required.

Table 23. - Freestone Peaches (108 trees/acre) for Fresh Market: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Harvesting, 222 hours/ha	823	333
Grading, 79.1 hours/ha	395	160
Other, 163 hours/ha	801	324
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	390	158
Fungicides	487	197
Herbicides	42	17
Manure, 11.2 tonne/ha	124	50
Replacement trees, 12/ha	59	24
Containers	2,034	823
Tractor and machine costs:		
Repairs and maintenance	222	90
Fuel	277	112
Building, repairs and electricity	50	20
Interest on operating capital	222	90
TOTAL	6,022	2,437
FIXED COSTS		
Operator labor, 100 hours/ha	676	273
Management allowance, 5% of gross income	482	195
Tractor and machine costs:		
Depreciation	424	171
Interest on investment	232	94
Insurance and storage	106	43
Building use	203	82
Interest on land, $22,240/ha @ 6.6% per annum	1,468	594
Taxes	52	21
Other overhead	99	40
TOTAL	3,742	1,513
TOTAL ALL COSTS	9,764	3,950
COST PER UNIT (Based on assumed yields of 11.2 tonne/ha and 5 ton/acre)	$872/tonne	$790/ton
GROSS MARGIN ANALYSIS (Based on average prices of $860.45/tonne and $7.80/3x4 L master)[a]		
Gross income	9,637	3,900
Total variable costs	6,022	2,437
Gross margin	3,615	1,463
CASH ANALYSIS		
Gross income	9,637	3,900
Cash costs[b]	6,277	2,540
Returns over cash costs	3,360	1,360

[a]The 1986 price is an average of the previous three years for peaches sold through the Central Fruit Exchange.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $104/ha ($42/ac.) plus taxes and other overhead costs.

Table 24. - Freestone Peaches (108 trees/acre) for Fresh Market: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Planting replacement trees	[a]	2.47	1.0	16.68	6.75
Pruning and brush removal	1	98.9	40.0	686.94	277.99
Cultivation	4	4.94	2.0	86.09	34.84
Spreading manure	1	3.71	1.5	94.42	38.21
Fertilizing	1	2.47	1.0	32.30	13.07
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	10	9.9	4.0	322.53	130.52
Hand thinning	1	89.0	36.0	444.80	180.00
Mowing	4	4.94	2.0	127.95	51.78
General maintenance	[a]	2.47	3.0	89.38	36.17
Distribution and collection of containers	[a]	24.7	10.0	390.76	158.13
Picking	[a]	222	90.0	851.76	344.69
Grading and packing	[a]	79.1	32.0	395.38	160.00
Marketing-delivery	[a]	12.4	5.0	334.71	135.45

[a]Operation performed as required.

Table 25. - Freestone Peaches (145 trees/acre) for Fresh Market: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Harvesting, 311 hours/ha	1,151	466
Grading, 98.8 hours/ha	494	200
Other, 217 hours/ha	1,070	433
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	390	158
Fungicides	487	197
Herbicides	42	17
Manure, 11.2 tonne/ha	124	50
Replacement trees, 17/ha	84	34
Containers	2,848	1,152
Tractor and machine costs:		
Repairs and maintenance	246	100
Fuel	326	132
Building, repairs and electricity	50	20
Interest on operating capital	284	115
TOTAL	7,692	3,113
FIXED COSTS		
Operator labor, 120 hours/ha	809	327
Management allowance, 5% of gross income	675	273
Tractor and machine costs:		
Depreciation	474	192
Interest on investment	257	104
Insurance and storage	116	47
Building use	203	82
Interest on land, $22,240/ha @ 6.6% per annum	1,468	594
Taxes	52	21
Other overhead	99	40
TOTAL	4,153	1,680
TOTAL ALL COSTS	11,845	4,793
COST PER UNIT (Based on assumed yields of 15.7 tonne/ha and 7.0 ton/acre)	$754/tonne	$685/ton
GROSS MARGIN ANALYSIS (Based on average prices of $860.45/tonne and $7.80/3x4 L master)[a]		
Gross income	13,492	5,460
Total variable costs	7,692	3,113
Gross margin	5,800	2,347
CASH ANALYSIS		
Gross income	13,492	5,460
Cash costs[b]	7,958	3,221
Returns over cash costs	5,534	2,239

[a]The 1986 price is an average of the previous three years for peaches sold through the Central Fruit Exchange.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $115/ha ($47/ac.) plus taxes and other overhead costs.

Table 26. - Freestone Peaches (145 trees/acre) for Fresh Market: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Planting replacement trees	[a]	2.47	1.0	16.68	6.75
Pruning and brush removal	1	133	54.0	943.32	381.74
Cultivation	4	4.94	2.0	86.09	34.84
Spreading manure	1	3.71	1.5	94.42	38.21
Fertilizing	1	2.47	1.0	32.30	13.07
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	10	9.9	4.0	322.53	130.52
Hand thinning	1	119	48.0	593.06	240.00
Mowing	4	4.94	2.0	127.95	51.78
General maintenance	[a]	2.47	3.0	89.38	36.17
Distribution and collection of containers	[a]	34.6	14.0	545.64	220.81
Picking	[a]	311	126	1,180.91	477.89
Grading and packing	[a]	98.8	40.0	494.22	200.00
Marketing-delivery	[a]	12.4	5.0	334.71	135.45

[a]Operation performed as required.

Table 27. - Bartlett Pears for Fresh Market: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Harvesting, 98.8 hours/ha	341	138
Grading, 29.7 hours/ha	148	60
Other, 39.5 hours/ha	184	74
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	460	186
Fungicides	42	17
Herbicides	42	17
Manure, 11.2 tonne/ha	124	50
Cover crop seed	10	4
Containers	1,388	562
Tractor and machine costs:		
Repairs and maintenance	182	73
Fuel	251	102
Building, repairs and electricity	58	24
Interest on operating capital	128	52
TOTAL	3,454	1,398
FIXED COSTS		
Operator labor, 91.4 hours/ha	617	250
Management allowance, 5% of gross income	334	135
Tractor and machine costs:		
Depreciation	347	141
Interest on investment	191	77
Insurance and storage	87	35
Building use	203	82
Interest on land, $11,120/ha @ 6.6% per annum	734	297
Taxes	52	21
Other overhead	99	40
TOTAL	2,664	1,078
TOTAL ALL COSTS	6,118	2,476
COST PER UNIT (Based on assumed yields of 8.97 tonne/ha and 4 ton/acre)	$682/tonne	$619/ton
GROSS MARGIN ANALYSIS (Based on average prices of $743.81/tonne and $7.50/3x4 L master)[a]		
Gross income	6,672	2,700
Total variable costs	3,454	1,398
Gross margin	3,218	1,302
CASH ANALYSIS		
Gross income	6,672	2,700
Cash costs[b]	3,690	1,494
Returns over cash costs	2,982	1,206

[a] The 1986 price is an average of the 1983-85 price for Bartlett pears sold through the Central Fruit Exchange.

[b] Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $85/ha ($35/ac.) plus taxes and other overhead costs.

Table 28. - Bartlett Pears for Fresh Market: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	76.6	31.0	666.75	269.82
Fertilizing	1	2.47	1.0	32.30	13.07
Cultivation	4	4.94	2.0	86.09	34.84
Mowing	2	2.47	1.0	63.98	25.89
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	6	4.94	2.0	161.26	65.26
Manure spreading	1	3.71	1.5	94.42	38.21
Sow cover crop	1	1.24	.5	23.94	9.69
General maintenance	[a]	2.47	1.0	37.81	15.30
Distribution and collection of containers	[a]	19.8	8.0	313.31	126.79
Picking	[a]	98.9	40.0	368.91	149.29
Sorting and grading	[a]	29.7	12.0	148.27	60.00
Marketing-delivery	[a]	9.9	4.0	267.77	108.36

[a] Operation performed as required.

Table 29. - Bartlett Pears for Processing: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Harvesting, 98.8 hours/ha	341	138
Grading, 29.7 hours/ha	148	60
Other, 39.5 hours/ha	184	74
Fertilizer:		
Am. Nit. 222 kg/ha	47	19
Mur. of Pot. 334 kg/ha	49	20
Insecticides	460	186
Fungicides	42	17
Herbicides	42	17
Manure, 11.2 tonne/ha	124	50
Cover crop seed	10	4
Tractor and machine costs:		
Repairs and maintenance	182	73
Fuel	251	102
Building, repairs and electricity	29	12
Marketing board fees	109	44
Interest on operating capital	77	31
TOTAL	2,095	847
FIXED COSTS		
Operator labor, 91.4 hours/ha	617	250
Management allowance, 5% of gross income	155	63
Tractor and machine costs:		
Depreciation	347	141
Interest on investment	191	77
Insurance and storage	87	35
Building use	203	82
Interest on land, $11,120/ha @ 6.6% per annum	734	297
Taxes	52	21
Other overhead	99	40
TOTAL	2,485	1,006
TOTAL ALL COSTS	4,580	1,853
COST PER UNIT (Based on assumed yields of 8.97 tonne/ha and 4 ton/acre)	$511/tonne	$463/ton
GROSS MARGIN ANALYSIS (Based on average prices of $345.15/tonne and $313.20/ton)[a]		
Gross income	3,096	1,253
Total variable costs	2,095	847
Gross margin	1,001	406
CASH ANALYSIS		
Gross income	3,096	1,253
Cash costs[b]	2,331	943
Returns over cash costs	765	310

[a]The 1986 price is an average of the previous three years based on a weighted average of 90% No. 1 and 10% No. 2 Bartlett pears.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $85/ha ($35/ac.) plus taxes and other overhead costs.

Table 30. - Bartlett Pears for Processing: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Pruning and brush removal	1	76.6	31.0	666.75	269.82
Fertilizing	1	2.47	1.0	32.30	13.07
Cultivation	4	4.94	2.0	86.09	34.84
Mowing	2	2.47	1.0	63.98	25.89
Weed spraying	1	2.47	1.0	47.94	19.40
Spraying	6	4.94	2.0	161.26	65.26
Manure spreading	1	3.71	1.5	94.42	38.21
Sow cover crop	1	1.24	.5	23.94	9.69
General maintenance	[a]	2.47	1.0	37.81	15.30
Distribution and collection of containers	[a]	19.8	8.0	313.31	126.79
Picking	[a]	98.9	40.0	368.91	149.29
Sorting and grading	[a]	29.7	12.0	148.27	60.00
Marketing-delivery	[a]	9.9	4.0	267.77	108.36

[a] Operation performed as required.

Table 31. - Strawberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Fertilizer:		
10-20-20 - 200 kg/ha	46	19
Herbicides	73	29
Green manure seed	15	6
Fumigant	454	184
Tractor and machine costs:		
Repairs and maintenance	24	10
Fuel	32	13
Custom application, fumigant	25	10
Interest on operating capital	116	47
TOTAL	785	318
FIXED COSTS		
Operator labor, 11.1 hours/ha	75	30
Tractor and machine costs:		
Depreciation	64	26
Interest on investment	33	13
Insurance and storage	13	5
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
TOTAL	518	209
TOTAL "PREPLANT YEAR" COSTS	1,303	527

Table 32. - Strawberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Plowing	2	4.94	2.0	112.04	45.34
Discing	1	1.24	.5	23.80	9.63
Seeding green manure	1	1.24	.5	26.22	10.61
Fertilizing	1	1.24	.5	26.22	10.61
Weed spraying	1	2.47	1.0	52.51	21.25

Table 33. - Strawberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor, 168 hours/ha	756	306
Fertilizer:		
Am. Nit. 80 kg/ha	17	7
10-20-20 - 400 kg/ha	94	38
Plant starter, 8 kg/ha	16	6
Insecticides	54	22
Fungicides	34	14
Herbicides	161	65
Manure, 45 tonne/ha	494	200
Plants, 12,355/ha	593	240
Straw, 7.4 tonne/ha	370	150
Tractor and machine costs:		
Repairs and maintenance	105	43
Fuel	147	59
Interest on operating capital	327	132
TOTAL	3,168	1,282
FIXED COSTS		
Operator labor, 38.3 hours/ha	259	105
Tractor and machine costs:		
Depreciation	341	138
Interest on investment	186	75
Insurance and storage	70	29
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
Other overhead costs	247	100
TOTAL	1,436	582
TOTAL "PLANTING YEAR" COSTS	4,604	1,864

Table 34. - Strawberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Spreading manure.....	1	4.94	2.0	167.29	67.70
Plowing.....	1	2.47	1.0	56.02	22.67
Discing.....	1	1.24	.5	25.65	10.38
Planting.....	1	49.4	20.0	479.27	193.95
Fertilizing.....	2	3.71	1.5	73.81	29.87
Handweeding, training, etc.	1	103.8	42.0	467.04	189.00
Weed spraying.....	2	4.94	2.0	105.02	42.50
Pesticide spraying.....	3	7.41	3.0	149.45	60.48
Cultivating.....	3	7.41	3.0	123.65	50.04
Mulching.....	1	21.0	8.5	217.04	87.83

Table 35. - Strawberry Renovation Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, Ontario, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor, 64.2 hours/ha	289	117
Fertilizer:		
Am. Nit. 100 kg/ha	21	9
10-20-20 - 500 kg/ha	116	47
Herbicides	59	24
Straw, 7.4 tonne/ha	370	150
Tractor and machine costs:		
Repairs and maintenance	53	21
Fuel	72	29
Interest on operating capital	94	38
TOTAL	1,074	435
FIXED COSTS		
Operator labor, 12.4 hours/ha	83	34
Tractor and machine costs:		
Depreciation	146	59
Interest on investment	77	31
Insurance and storage	30	12
TOTAL	336	136
TOTAL RENOVATION COSTS	1,410	571

Table 36. - Strawberry Renovation Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Mowing	1	2.47	1.0	62.99	25.49
Rotovating	1	4.94	2.0	93.41	37.80
Fertilizing	2	2.47	1.0	52.46	21.23
Weed spraying	2	4.94	2.0	105.02	42.50
Cultivating	4	4.94	2.0	82.44	33.36
Hand hoeing	1	37.1	15.0	166.80	67.50
Mulching	1	19.8	8.0	187.01	75.68

Table 37. - Strawberry Preharvest and Harvest Costs for Commercial Harvest: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Preharvest 29.7 hours/ha	133	54
Harvest 1,105 hours/ha	3,474	1,406
Insecticides	131	53
Fungicides	247	100
Containers, 14,827 quarts/ha	2,595	1,050
Tractor and machine costs:		
Repairs and maintenance	105	42
Fuel	165	67
Interest on operating capital	26	11
TOTAL	6,876	2,783
FIXED COSTS		
Operator labor:		
Preharvest 14.8 hours/ha	100	40
Harvest 44.5 hours/ha	300	122
Management allowance, 5% of gross income	704	285
Tractor and machine costs:		
Depreciation	260	105
Interest on investment	134	54
Insurance and storage	53	22
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
Other overhead	297	120
TOTAL	2,181	883
TOTAL PREHARVEST AND HARVEST COSTS	9,057	3,666
GROSS MARGIN ANALYSIS		
(Based on assumed yields of 8,407 kg/ha or 6,000 quarts/acre and assumed prices of $1.68/kg or 95 cents/quart)		
Gross income	14,085	5,700
Variable costs:		
Establishment (1/4 of cost)[a]	988	400
Preharvest and harvest	6,876	2,783
Renovation (3/4 of cost)[a]	806	326
TOTAL	8,670	3,509
Gross Margin	5,415	2,191
CASH ANALYSIS		
Gross income	14,085	5,700
Cash costs:[b]		
Establishment (1/4 of cost)[a]	1,094	443
Preharvest and harvest	7,273	2,943
Renovation (3/4 of cost)[a]	832	337
TOTAL	9,199	3,723
Returns over cash costs	4,886	1,977

[a]The costs shown in this table are based on a system in which there are four harvesting years following the establishment year. Hence, establishment costs are spread over four production years. On the average, a field will be renovated three times during the four-year cycle before the field is taken out of production.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $110/ha ($45/acre) plus taxes and other overhead costs.

Table 38. - Strawberry Preharvest and Harvest Costs for Commercial Harvest: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Preharvest					
Removing mulch.....	1	7.41	3.0	71.34	28.87
Set-up and irrigating.....	[a]	9.88	4.0	391.60	158.47
Spraying pesticides.....	6	14.83	6.0	298.90	120.96
Hand weeding.....	1	12.36	5.0	55.60	22.50
Harvest					
Harvesting.....	[a]	971.1	393.0	3,213.29	1,300.35
Assembling masters.....	[a]	79.1	32.0	249.09	100.80
Miscellaneous work.....	[a]	98.8	40.0	444.80	180.00

[a]Operation performed as required.

Table 39. - Strawberry Preharvest and Harvest Costs for Pick-Your-Own: Estimated Cost of Production, Ontario, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor:		
Preharvest 29.6 hours/ha	133	54
Harvest 178 hours/ha	801	324
Insecticides	131	53
Fungicides	247	100
Tractor and machine costs:		
Repairs and maintenance	105	42
Fuel	165	67
Advertising	346	140
Interest on operating capital	18	7
TOTAL	1,946	787
FIXED COSTS		
Operator labor:		
Preharvest 14.8 hours/ha	100	40
Harvest 44.5 hours/ha	300	122
Management allowance, 5% of gross income	482	195
Tractor and machine costs:		
Depreciation	260	105
Interest on investment	134	54
Insurance and storage	53	22
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
Other overhead	297	120
TOTAL	1,959	793
TOTAL PREHARVEST AND HARVEST COSTS	3,905	1,580
GROSS MARGIN ANALYSIS		
(Based on assumed yields of 8,407 kg/ha or 6,000 quarts/acre and assumed prices of $1.15/kg or 65 cents/quart)		
Gross income	9,637	3,900
Variable costs:		
Establishment (1/4 of cost)[a]	988	400
Preharvest and harvest	1,946	787
Renovation (3/4 of cost)[a]	806	326
TOTAL	3,740	1,513
Gross Margin	5,897	2,387
CASH ANALYSIS		
Gross income	9,637	3,900
Cash costs:[b]		
Establishment (1/4 of cost)[a]	1,094	443
Preharvest and harvest	2,342	947
Renovation (3/4 of cost)[a]	832	337
TOTAL	4,268	1,727
Returns over cash costs	5,369	2,173

[a]The costs shown in this table are based on a system in which there are four harvesting years following the establishment year. Hence, establishment costs are spread over four production years. On the average, a field will be renovated three times during the four-year cycle before the field is taken out of production.

[b]Cash costs include total variable costs plus interest on the debt portion of investment in tractors and machines of $110/ha ($45/acre) plus taxes and other overhead costs.

Table 40. - Strawberry Preharvest and Harvest Costs for Pick-Your-Own: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Preharvest					
Removing mulch.....	1	7.41	3.0	71.34	28.87
Set-up and irrigating.....	[a]	9.88	4.0	391.60	158.47
Spraying pesticides.....	6	14.83	6.0	298.90	120.96
Hand weeding.....	1	12.36	5.0	55.60	22.50
Harvest					
Harvesting supervision....	[a]	44.5	18.0	433.31	175.35
Harvesting assistance.....	[a]	177.9	72.0	800.64	324.00

[a] Operation performed as required.

Table 41. - Raspberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Fertilizer:		
8-32-16 150 kg/ha	41	16
Am. Nitrate 100 kg/ha	21	9
Herbicides	484	196
Green manure seed	14	6
Tractor and machine costs:		
Repairs and maintenance	26	11
Fuel	36	14
Interest on operating capital	179	72
TOTAL	801	324
FIXED COSTS		
Operator labor, 12.4 hours/ha	83	34
Tractor and machine costs:		
Depreciation	70	28
Interest on investment	37	15
Insurance and storage	14	6
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
TOTAL	537	218
TOTAL "PREPLANT YEAR" COSTS	1,338	542

Table 42. - Raspberry "Preplant Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Plowing	2	4.94	2.0	112.04	45.34
Discing	1	1.24	.5	23.80	9.63
Seeding green manure	1	2.47	1.0	52.46	21.23
Fertilizing	1	1.24	.5	26.22	10.61
Weed spraying	1	2.47	1.0	52.51	21.25

Table 43. - Raspberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, 1986

	Cost, $ per hectare	Cost, $ per acre
VARIABLE COSTS		
Hired labor, 89 hours/ha	320	130
Fertilizer:		
15-15-15 445 kg/ha	102	41
10-52-10 14 kg/ha	28	11
Insecticides	15	6
Fungicides	17	7
Plants, 4,942/ha	1,483	600
Cover crop seed	63	26
Trickle irrigation	1,767	715
Trellis posts	185	75
Tractor and machine costs:		
Repairs and maintenance	111	45
Fuel	131	53
Interest on operating capital	729	295
TOTAL	4,951	2,004
FIXED COSTS		
Operator labor, 55.6 hours/ha	377	152
Tractor and machine costs:		
Depreciation	360	145
Interest on investment	206	84
Insurance and storage	76	31
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
Other overhead costs	247	100
TOTAL	1,599	647
TOTAL "PLANTING YEAR" COSTS	6,550	2,651

Table 44. - Raspberry "Planting Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Discing	2	2.47	1.0	47.62	19.27
Harrowing	1	1.24	.5	23.03	9.32
Fertilizing	1	1.24	.5	26.22	10.61
Lay out field	1	7.41	3.0	50.04	20.25
Planting	1	39.54	16.0	383.42	155.16
Irrigation	[a]	4.94	2.0	43.24	17.50
Cultivating	4	12.36	5.0	229.94	93.05
Hoe, weed, blossom removal	[a]	49.42	20.0	155.68	63.00
Seeding cover crop	1	1.24	.5	26.22	10.61
Spraying pesticides	2	4.94	2.0	170.41	68.96
Installing posts	[a]	19.77	8.0	418.51	169.36

[a]Operation performed as required.

Table 45. - Raspberry "Growth Year" Costs for Commercial Harvest and Pick-Your-Own: Estimated Cost of Production, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor, 121 hours/ha	445	180
Fertilizer, 17-17-17 340 kg/ha	81	33
Insecticides	63	26
Fungicides	422	171
Herbicides	7	3
Trellis wire	593	240
Tractor and machine costs:		
Repairs and maintenance	141	57
Fuel	94	38
Interest on operating capital	106	43
TOTAL	1,952	791
FIXED COSTS		
Operator labor, 29.7 hours/ha	200	81
Tractor and machine costs:		
Depreciation	232	93
Interest on investment	131	53
Insurance and storage	48	20
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
Other overhead costs	247	100
TOTAL	1,191	482
TOTAL "GROWTH YEAR" COSTS	3,143	1,273

Table 46. - Raspberry "Growth Year" Costs for Commercial Harvest and Pick-Your-Own: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours		Labor, tractor and machine costs, $	
		per ha	per ac.	per ha	per ac.
Fertilizing	1	1.24	.5	26.22	10.61
Mowing	3	3.71	1.5	102.82	41.61
Hand weeding	[a]	12.36	5.0	38.92	15.75
Irrigating	[a]	7.41	3.0	64.87	26.25
Weed spraying	1	2.47	1.0	52.51	21.25
Spraying pesticides	6	14.83	6.0	511.22	206.88
Thinning canes	[a]	74.13	30.0	250.20	101.25
Stretch wire	[a]	34.60	14.0	235.52	95.31

[a]Operation performed as required.

Table 47. - Raspberry Preharvest and Harvest Costs for Commercial Harvest: Estimated Cost of Production, Ontario, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Preharvest 123.6 hours/ha	489	198
Harvest 858.7 hours/ha	3,415	1,382
Fertilizer, 17-17-17 340 kg/ha	81	33
Insecticides	63	26
Fungicides	422	171
Herbicides	179	72
Miticides	162	66
Containers, 6,672 pints/ha	943	382
Trellis materials	68	28
Tractor and machine costs:		
Repairs and maintenance	222	90
Fuel	215	87
Comfort station rental	37	15
Interest on operating capital	181	73
TOTAL	6,477	2,623
FIXED COSTS		
Operator labor:		
Preharvest 87.7 hours/ha	592	240
Harvest 74.1 hours/ha	500	202
Management allowance, 5% of gross income	500	202
Tractor and machine costs:		
Depreciation	398	161
Interest on investment	212	86
Insurance and storage	81	33
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
Other overhead	371	150
TOTAL	2,987	1,209
TOTAL PREHARVEST AND HARVEST COSTS	9,464	3,832
GROSS MARGIN ANALYSIS		
(Based on assumed yields of 6,672 pints/ha or 2,700 pints/acre and assumed price of $1.50/pint)		
Gross income	10,008	4,050
Variable costs:		
Amortized establishment costs[a]	2,662	1,078
Preharvest and harvest	6,477	2,623
TOTAL	9,139	3,701
Gross Margin	869	349
CASH ANALYSIS		
Gross income	10,008	4,050
Cash costs:		
Amortized establishment costs[a]	2,662	1,078
Preharvest and harvest[b]	6,982	2,828
TOTAL	9,644	3,906
Returns over cash costs	364	144

[a] Amortized establishment costs include preplant year costs, planting year costs, and growth year costs amortized over five production years at a rate of 6.6 percent.

[b] Cash costs for preharvest and harvest include total variable costs plus interest on the debt portion of investment in tractors and machines of $95/ha ($39/acre) plus taxes and other overhead costs.

Table 48. - Raspberry Preharvest and Harvest Costs for Commercial Harvest: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Preharvest					
Topping, pruning, thinning	[a]	123.56	50.0	544.88	220.50
Removing brush.....	[a]	4.94	2.0	91.33	36.96
Fertilizing.....	1	2.47	1.0	47.59	19.26
Mowing.....	3	3.71	1.5	102.82	41.61
Weed spraying.....	2	4.94	2.0	100.10	40.51
Irrigating.....	[a]	12.36	5.0	127.88	51.75
Spraying pesticides.....	7	17.30	7.0	596.42	241.36
Removing canes.....	[a]	24.71	10.0	111.20	45.00
Trellis maintenance.....	[a]	17.30	7.0	196.60	79.56
Harvest					
Supervision.....	[a]	74.13	30.0	766.54	310.20
Picking.....	[a]	834.0	337.5	3,335.99	1,350.00
Assembling masters.....	[a]	24.71	10.0	77.84	31.50

[a]Operation performed as required.

Table 49. - Raspberry Preharvest and Harvest Costs for Pick-Your-Own: Estimated Cost of Production, Ontario, 1986

	Cost, $	
	per hectare	per acre
VARIABLE COSTS		
Hired labor:		
Preharvest 123.6 hours/ha	489	198
Harvest 74.1 hours/ha	300	122
Fertilizer, 17-17-17 340 kg/ha	81	33
Insecticides	63	26
Fungicides	422	171
Herbicides	179	72
Miticides	162	66
Trellis materials	68	28
Tractor and machine costs:		
Repairs and maintenance	222	90
Fuel	215	87
Comfort station rental	37	15
Checkout equipment rental	272	110
Advertising	371	150
Interest on operating capital	87	35
TOTAL	2,968	1,203
FIXED COSTS		
Operator labor:		
Preharvest 87.7 hours/ha	592	240
Harvest 49.4 hours/ha	321	135
Management allowance, 5% of gross income	334	135
Tractor and machine costs:		
Depreciation	398	161
Interest on investment	212	86
Insurance and storage	81	33
Interest on land, $4,450/ha @ 6.6% per annum	294	119
Taxes	39	16
Other overhead	507	205
TOTAL	2,778	1,130
TOTAL PREHARVEST AND HARVEST COSTS	5,746	2,333
GROSS MARGIN ANALYSIS		
(Based on assumed yields of 6,672 pints/ha or 2,700 pints/acre and assumed price of $1.00/pint)		
Gross income	6,672	2,700
Variable costs:		
Amortized establishment costs[a]	2,662	1,078
Preharvest and harvest	2,968	1,203
TOTAL	5,630	2,281
Gross Margin	1,042	419
CASH ANALYSIS		
Gross income	6,672	2,700
Cash costs:		
Amortized establishment costs[a]	2,662	1,078
Preharvest and harvest[b]	3,609	1,463
TOTAL	6,271	2,541
Returns over cash costs	401	159

[a] Amortized establishment costs include preplant year costs, planting year costs, and growth year costs amortized over five production years at a rate of 6.6 percent.

[b] Cash costs for preharvest and harvest include total variable costs plus interest on the debt portion of investment in tractors and machines of $95/ha ($39/acre) plus taxes and other overhead costs.

Table 50. - Raspberry Preharvest and Harvest Costs for Pick-Your-Own: Operation Costs, Ontario, 1986

Operation	Times over	Labor hours per ha	Labor hours per ac.	Labor, tractor and machine costs, $ per ha	Labor, tractor and machine costs, $ per ac.
Preharvest					
Topping, pruning, thinning	[a]	123.56	50.0	544.88	220.50
Removing brush.....	[a]	4.94	2.0	91.33	36.96
Fertilizing.....	1	2.47	1.0	47.59	19.26
Mowing.....	3	3.71	1.5	102.82	41.61
Weed spraying.....	2	4.94	2.0	100.10	40.51
Irrigating.....	[a]	12.36	5.0	127.88	51.75
Spraying pesticides.....	7	17.30	7.0	596.42	241.36
Removing canes.....	[a]	24.71	10.0	111.20	45.00
Trellis maintenance.....	[a]	17.30	7.0	196.60	79.56
Harvest					
Supervision.....	[a]	49.42	20.0	599.74	242.70
Check out.....	[a]	74.13	30.0	300.24	121.50

[a]Operation performed as required.

Appendix Table 1. - Marketed Fruit Production, Ontario, 1981-1985 (Imperial Units)

Crop	Unit	1981	1982	1983	1984	1985[a]
				- '000 -		
Apples.....	lb	254,799	350,613	364,185	317,600	402,777
Cantaloupes.....	lb	1,078	1,068	1,245	1,085	1,818
Cherries, sour....	lb	5,153	14,290	12,642	15,285	13,696
Cherries, sweet...	lb	1,570	3,030	4,040	5,129	3,464
Grapes.....	lb	137,648	129,519	156,634	180,074	138,672
Peaches.....	lb	35,236	51,841	59,744	45,472	70,014
Pears, Bartlett...	lb	14,972	17,972	18,712	18,383	22,545
Pears, Bosc.....	lb	4,928	4,182	5,970	5,415	2,928
Pears, other.....	lb	8,460	4,421	3,697	3,327	2,628
Plums & prunes....	lb	4,428	8,571	5,927	6,658	5,319
Raspberries.....	qt	716	934	856	820	1,094
Strawberries.....	qt	18,449	16,640	14,072	16,492	22,670

Source: Seasonal Fruit and Vegetable Report, Annual Summary, Economics and Policy Coordination Branch, Ontario Ministry of Agriculture and Food.

Marketed Fruit Production, Ontario, 1981-1985 (Metric Units)

Crop	1981	1982	1983	1984	1985[a]
			- tonnes -		
Apples.....	115,577	159,035	165,192	144,061	182,700
Cantaloupes.....	489	484	565	492	825
Cherries, sour.....	2,337	6,482	5,734	6,933	6,212
Cherries, sweet.....	712	1,374	1,833	2,326	1,571
Grapes.....	62,436	58,749	71,048	81,680	62,901
Peaches.....	15,983	23,515	27,099	20,626	31,758
Pears, Bartlett.....	6,791	8,152	8,488	8,338	10,226
Pears, Bosc.....	2,235	1,897	2,708	2,456	1,328
Pears, other.....	3,838	2,005	1,677	1,509	1,192
Plums & prunes.....	2,009	3,888	2,688	3,020	2,413
Raspberries.....	406	530	485	465	620
Strawberries.....	10,461	9,435	7,979	9,351	12,854

[a]Prelimary, subject to revision.

Source: Seasonal Fruit and Vegetable Report, Annual Summary, Economics and Policy Coordination Branch, Ontario Ministry of Agriculture and Food.

Appendix Table 2. - Average Prices Received for Fruit, Ontario, 1981-1985

		1981	1982	1983	1984	1985
				- cents/lb -		
Apples	- fresh	22.3	13.9	15.5	16.6	n/a
	- proc.	9.2	6.6	6.7	7.8	n/a
Cantaloupes	- fresh	26.7	27.5	27.3	31.6	34.0
Cherries, sour	- fresh	55.7	23.8	58.6	43.1	41.5
	- proc.	58.1	23.3	50.7	34.5	38.3
Cherries, sweet	- fresh	53.4	55.1	39.6	43.8	77.4
	- proc.	28.7	25.3	30.4	32.3	32.8
Grapes	- fresh	20.6	22.0	23.4	23.0	26.9
	- proc.	16.7	18.6	20.6	18.7	18.8
Peaches	- fresh	29.3	31.9	24.0	30.0	26.0
	- proc.	19.7	21.2	21.3	22.3	22.3
Pears	- fresh	21.2	20.3	20.0	24.4	27.7
	- proc.	14.2	15.5	14.0	15.3	17.0
Plums & prunes	- fresh	26.1	33.1	25.0	33.4	57.8
	- proc.	15.2	16.2	15.9	16.2	17.5
Raspberries	- fresh	145.4	150.2	174.4	177.8	166.3
Strawberries	- fresh	43.3	51.8	53.8	53.5	55.7
				- cents/kg -		
Apples	- fresh	49.2	30.6	34.2	36.6	n/a
	- proc.	20.3	14.6	14.8	17.2	n/a
Cantaloupes	- fresh	58.9	60.6	60.2	69.7	75.0
Cherries, sour	- fresh	122.8	52.5	129.2	95.0	91.5
	- proc.	128.1	51.4	111.8	76.1	84.4
Cherries, sweet	- fresh	117.7	121.5	87.3	96.6	170.6
	- proc.	63.3	55.8	67.0	71.2	72.3
Grapes	- fresh	45.4	48.5	51.6	50.7	59.3
	- proc.	36.8	41.0	45.4	41.2	41.4
Peaches	- fresh	64.6	70.3	52.9	66.1	57.3
	- proc.	43.4	46.7	47.0	49.2	49.2
Pears	- fresh	46.7	44.8	44.1	53.8	61.1
	- proc.	31.3	34.2	30.9	33.7	37.5
Plums & prunes	- fresh	57.5	73.0	55.1	73.6	127.4
	- proc.	33.5	35.7	35.1	35.7	38.6
Raspberries	- fresh	320.5	331.1	384.5	392.0	366.6
Strawberries	- fresh	95.5	114.2	118.6	117.9	122.8

Source: Seasonal Fruit and Vegetable Report, Economics and Policy Coordination Branch, Ministry of Agriculture and Food.

Appendix Table 3. - Minimum Prices Paid for Ontario Tender Fruit for Processing, 1982-1986

	1982	1983	1984	1985	1986
			- $/ton -		
Sweet cherries,					
canning.....	1,000.50	1,001.50	1,001.50	1,161.50	1,201.50
maraschino.....	400.50	521.50	561.50	601.50	641.50
Sour cherries,					
97 to 100 grade...	520.80	1,053.65	726.90	814.10	923.10
74 & below grade..	384.50	775.25	535.50	599.50	679.50
Plums.....	276.50	277.50	291.50	303.50	303.50
Prunes.....	318.50	319.50	335.50	348.50	348.50
Damsons.....	340.50	341.50	358.50	372.50	372.50
Bartlett pears,					
No. 1.....	336.00	291.50	326.50	359.50	359.50
No. 2.....	211.00	181.50	204.50	212.50	212.50
Other pears, No. 1..	276.00	251.50	290.50	319.50	319.50
Peaches,					
freestone.....	373.00	373.50	392.50	408.50	408.50
clingstone.....	426.00	426.50	447.50	465.50	465.50

Source: Ontario Tender Fruit Producers' Marketing Board

Appendix Table 4. - Minimum Prices Paid for Ontario Grapes for Processing, 1981-1985

	1981	1982	1983	1984	1985
			- $/ton -		
Class 1. (Concord, Fredonia, Beta, Clinton, Lincoln, Lomanto, Patricia, President, VanBuren, Veeport & Westfield)	280	303	306	295	271
Class 2. (Elvira, Buffalo, Missouri Reisling, Ontario, Seneca, V35122, & V35123)....	291	317	339	316	310
Class 3. (Niagara).....	259	282	287	275	265
Class 3A. (Agawam, Brighton, Vergenes, Diana, Caco).....	277	292	298	285	270
Class 4. (Catawba & Ventura)...	334	364	385	361	346
Class 5. (Blue French Hybrids, Baco Noir, Villard Noir, Chancellor, Cascade, Seibel 13053, & Chambourcin).....	400	430	446	428	422.50
Class 5A. (deChaunac).....	337	348	361	347	340
Class 5B. (Chelois).....	410	439	458	435	427.50
Class 5C. (Rosette).....	400	430	446	428	375
Class 6. (Delaware, Dutchess, N.Y. Muscat, Canada Muscat)..	555	606	636	600	564
Class 6A. (Marechal Foch & Leon Millot).....	420	433	448	430	422.50
Class 6B. (Alden, Veeblanc, Vincent).....	555	606	636	600	461
Class 7. (White French Hybrids, Seibel 8229, 10868, 13047, Aurore, Verdelet, Seyve-Villard 172 & 23512, Seyval Blanc, Siegfried Rebe, & Vidal 256).....	570	622	653	615	585
Class 8. (LeCommandent).....	440	453	459	439	420
Class 8A. (Couderc 29935, Colobel, Florental, & B.S. 2846).....	554	605	638	598	594
Class 9. (J. Riesling, Bacchus, Kerner).....	850	910	868	800	760
Class 9A. (Gamay, Aligote).....	850	910	933	870	810
Class 9B. (Chardonnay).....	850	910	933	870	870
Class 9C. (all other Vinifera)..	850	910	1,000	925	875
Class 10. (experimental varieties).....	482	538	559	549	563

Source: Ontario Grape Growers' Marketing Board, Annual Report.